

**[CLAIMS]**

[Claim 1] A head-extended pile for supporting load of a structure, wherein the pile has a reinforcement part provided at the lower end of the pile, the reinforcement part having a diameter larger than that of the pile so that the front end supporting force of the pile is increased.

[Claim 2] The pile as set forth in claim 1, wherein the reinforcement part is further provided at the lower or front end of the pile.

[Claim 3] The pile as set forth in claim 1 or 2, wherein the reinforcement part comprises:

10           a reinforcing member vertically attached to the end of the pile; and  
            a conical member disposed between the outer circumference of the pile and the upper surface of the reinforcing member protruded from the outer circumference of the pile for downwardly supporting the protruded part of the reinforcing member.

15           [Claim 4] The pile as set forth in claim 3, wherein the conical member comprises a plurality of triangular members disposed around the pile while being spaced a prescribed distance from each other.

[Claim 5] The pile as set forth in claim 1, wherein the reinforcement part comprises:

20           an iron disk having a prescribed depth and an inner diameter equal to the diameter of a cylindrical pile part;  
            a reinforcing disk attached to the iron disk, the reinforcing disk having a

diameter larger than that of the iron disk; and

reinforcing wings attached to the outer circumference of the iron disk and to the upper surface of the reinforcing disk.

[Claim 6] The pile as set forth in claim 5, wherein the reinforcing disk has a  
5 water-discharging hole formed through the center of the reinforcing disk.

[Claim 7] A constructing method of a head-extended pile in the ground composed of collapsible soil when the ground is bored, comprising the steps of:

selecting a pile, preparing and checking a pile driving operation, and removing obstructions (S10);

10 inspecting the ground to be constructed, reinforcing the ground, and installing a pile-driving machine (S20);

checking perpendicularity of a casing or a screw auger and a reader at the front and at the side to fix the position of the casing (S30);

checking a soil layer where the pile can be driven on the basis of  
15 excavation, a geological survey report, used current of an auger motor, the discharged amount of soil, and a trial pile driving operation so that the excavation is carried out by means of the casing and the screw auger (S40);

mixing water and cement by means of an exclusive mixer to obtain cement paste (S50);

20 injecting cement paste at high pressure after the screw auger is withdrawn (S60);

penetrating the screw auger again to stir the cement paste and treat the slime (S70);

slowly withdrawing the screw auger (S80);

25 erecting the head-extended pile so that the head-extended pile is

penetrated by means of its own weight (S90);

slowly withdrawing the casing while the upper end of the pile is fixed by means of the screw auger (S100); and

driving the head-extended pile so that the pile can be penetrated (S110).

5 [Claim 8] A constructing method of a head-extended pile in the ground composed of uncollapsible soil when the ground is bored, comprising the steps of:

selecting a pile, preparing and checking a pile driving operation, and removing obstructions (S200);

10 inspecting the ground to be constructed, reinforcing the ground, and installing a pile-driving machine (S210);

checking perpendicularity of a screw auger and a reader at the front and at the side to fix the position of the screw auger (S220);

15 checking a soil layer where the pile can be driven on the basis of excavation, a geological survey report, used current of an auger motor, the discharged amount of soil, and a trial pile driving operation so that the excavation is carried out by means of the screw auger (S230);

mixing water and cement by means of an exclusive mixer to obtain cement paste (S240);

20 withdrawing the screw auger (S250);

injecting the cement paste at high pressure (S260);

penetrating the screw auger again to stir the cement paste and treat the slime (S270);

25 erecting the head-extended pile so that the pile is penetrated by means of its own weight (S280); and

driving the head-extended pile so that the pile can be penetrated (S290).

[Claim 9] A constructing method of a head-extended pile as set force in claim 1 wherein the head-extended pile is directly driven so that the pile is penetrated.

[Claim 10] A constructing method of a head-extended pile as set force in claim 1 wherein the head-extended pile is inserted and then directly driven or securely  
5 located after the excavation is finished.

[Claim 11] A constructing method of a head-extended pile as set force in claim 1 wherein the head-extended pile is directly penetrated while the head-extended pile is inserted in any one of a steel tube, a concrete tube, a synthetic resin tube, and a wood tube.

10 [Claim 12] A constructing method of a head-extended pile as set force in claim 1 wherein the head-extended pile is penetrated through the use of hydraulic pressure, pneumatic pressure, or pressure generated by chemical means.